CHAPTER 8

DISTRIBUTIONAL IMPACTS

I. Introduction

Benefit-cost analysis, properly applied, will yield answers to the two economic questions of what to produce and how to product it. By carefully identifying all relevant alternatives for achieving each proposed objective and undertaking only that alternative with the highest positive net present value (or not undertaking any alternative when none have positive net present value) society's welfare as a whole will be improved by as much as possible. This will occur because more total value--benefits net of the costs of the resources consumed to produce them--will be created than for any other alternative that might be undertaken. However, it is very likely that not all members of society will be better off after the alternative is undertaken than before. This is because the recipients of the benefits of governmental investments or regulations are frequently not those who bear the costs of these investments or regulations. Nonetheless, the potential will exist for all individual members of society to be made better off because those who benefit from the governmental actions could fully compensate those who loose and still be better off than before.

II. Requirement

In order to fully inform decisionmakers of the distributional impacts of the benefits and costs of proposed governmental actions, OMB has directed that when benefits and costs of proposed governmental actions have significant distributional effects, an analysis and discussion of these effects should be included in the benefit-cost analysis.[1] In practice, a distributional assessment should be undertaken only when significant distributional effects can be reasonably anticipated to occur. Many FAA investment projects will most likely not require this assessment in that the beneficiaries of these investments are the ones who pay for them through direct user investment, the aviation excise taxes, and/or direct fees. Where cross subsidization between user groups or subsidization by others including the

[1] "OMB Circular A-94" (Revised--October 29, 1992) pp. 13-14, and "OMB Economic Analysis of Federal Regulation Under Executive Order 12866" (January 11, 1996) pp. 23-24.

general taxpayer is anticipated, an assessment should be completed. For many regulations, the same is probably also true in that those groups that receive the benefits also ultimately bear the costs of the regulation. (A noted exception are environmental impacts, where those who are exposed to pollution or noise do not pay the costs of its mitigation and are rarely compensated for their exposure.) Again, where one group or groups is anticipated to gain significantly while others bear the costs, an assessment should be undertaken. Finally, it should be noted that the requirement for an analysis of distributional impacts applies principally to benefit-cost analyses, not to cost-effectiveness analyses. In cost-effectiveness analyses, the benefits provided to the public are generally unchanged; the analysis is focused on identifying the lowest cost method of providing them. Because there are no public gainers or losers, a distributional analysis is unnecessary.

In addition, it may be necessary to develop distributional information to demonstrate U.S. Government compliance with accepted international principles for charging--via direct fees or indirect excise taxes--for air traffic control, certification, and other FAA services. ICAO guidelines specify that costs incurred to provide services to one group of users should not be charged to others. Moreover, the *Chicago Convention* requires that foreign operators be charged the same fees that domestic operators are charged, where both classes of operators are providing the same type--e.g. international scheduled carriage--of service.[2]

III. Distributional Categories

The first step in assessing distributional impacts is to establish categories of individuals or groups that may be differentially impacted. Although this process will depend upon the specific governmental action being analyzed, characteristics of groups for distributional assessment could include one or more of the following characteristics:

- Geographical area (including those living within and outside airport noise footprints)
- Demographic group such as age, race, etc.
- Income class (divided by quintile, for example)
- Traditional aviation user group (including domestic air carriers, international air carriers, general aviation, etc.)
- Recipients of FAA services (passengers, air carriers, airports, manufactures, airmen, designated examiners, etc.)

[2] "Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services," Fifth Edition, Document 9082/5, International Civil Aviation Organization; and *Convention on International Civil Aviation,* Sixth Edition, Document 7300/6, International Civil Aviation Organization, Article 15.

- Industry or occupation group

For any specific analysis, groups should be constructed so as to characterize relevant gainers and losers from pursuing a governmental action. As an example, analysis of a proposed action which would change the amount and distribution of aircraft noise should identify what groups--classified by income level, age, and geographic location--would be exposed to more or less noise. The analysis would also need to identify what groups would gain or loose--passengers, air carriers, airports, etc.--from the proposed actions impact on the number or routing of flights.

As another example, a proposed action such as establishment of a Terminal Control Area that would impose airspace use restrictions based on type of operation and aircraft equipage could be expected to restrict general aviation use of certain airspace or condition its use on acquisition of particular equipment while improving safety and efficiency for the flying public in general. For the analysis of such an action, it would be important to establish groupings that recognize such groups as general aviation, air carriers, and passengers.

In addition, the presence and extent of intergenerational transfers, if any, should be identified. Such transfers occur where particular generations receive the benefits stemming from a governmental action while others bear the costs of this action. An example would be an environmental regulation which permitted the current generation to pollute (thus avoiding the costs of pollution mitigation) at the expense of future generations which would inherit the damage done by the pollution and the costs of dealing with it. Another example would be an investment which must be made today but which would yield benefits primarily to future generations. It should be noted that because most FAA investments or regulations begin to generate benefits within several years of when costs begin to be incurred, it is unlikely that intergenerational transfers will be significant for most FAA actions. Exceptions might include actions concerning airports where decisions made today will have long lasting impacts on land use, potentially generate benefits for many years beyond the current generation, or in the case of landbanking, incur significant current costs yet generate no benefits for many years to come before having the potential to generate very large benefits.

IV. Distributional Assessment

For purposes of a distributional assessment, identified gains and losses should consist of both benefits and cost, as described elsewhere in this guide, as well as transfers of property rights or wealth from one group to another. Benefits and costs are different than transfers in that benefits and costs represent, respectively, value created or resources consumed as a result of a governmental action. Transfers represent merely a redistribution of wealth or rights. Examples of benefits and costs are the improved safety and efficiency of investments in the National Airspace System and the resources consumed to make them. An example of a transfer is the loss of environmental quality in one neighborhood and its gain in another resulting from the rerouting of aircraft so as to shift noise from one area to another.

For each identified group that may potentially gain or loose as a result of a governmental action, the analysis should, if possible, estimate the amount of gain or loss. Where quantitative estimates can not be made, a qualitative assessment should be presented. If gainers provide compensation to losers, who pays and who receives such compensation and its amount should be reported. The present value of the gains or losses experienced by each identified group together with the flows of gains and losses in each time period should be presented. Present values provide a convenient summary. The time distributed flows permit an assessment of the intergenerational impact of the action, if any.

Gains and losses from an action ultimately impact individuals and households even though they may initially affect intermediate groups first. In addition to identifying immediate impacts on intermediate groups, the distributional assessment should also focus on the ultimate economic incidence of the proposed governmental action. For example, an investment which reduced delays at an airport would initially save airline operating costs and passengers time. If the airlines were subject to competition, reduced costs would result in reduced ticket prices and the benefits of reduced operating costs would ultimately flow to the passenger. Passengers would thus be the ultimate recipients of both time saving and reduced airline operating costs. Alternatively, if the airline(s) serving the airport were not subject to competition, reduced costs would result in higher profits which would flow to their owners, not to their passengers.

There are no generally accepted principles for judging the merits of certain groups gaining at the expense of others. Accordingly, the distributional assessment should be confined to describing them in order to provide the decisionmaker with complete information. No judgments should be made in the analysis.

V. An Example--The High Density Rule Study

The High Density Rule (HDR) specifies the number of operations per hour that may be conducted at four airports--Washington National, Chicago O'Hare, New York Kennedy, and New York LaGuardia. The Department of Transportation conducted a study and prepared a report to Congress on the merits of terminating or modifying this rule.[3] This study developed and presented estimates of benefits and costs at each airport for three identified groups--passengers, airlines, and airports--as well as transfers between groups. Selected analytical results for immediately removing the HDR at LaGuardia Airport are presented in Table 8-1.

Removal of the HDR permits more service to be provided which results in lower fares. Consumers gain in two ways. First, current passengers enjoy lower fares. Second, additional consumers fly at the lower fares. More service also results in increased delay to consumers, but overall they enjoy a net gain.

For airlines, the results are somewhat different. The gain to current consumers comes at the expense of the airlines--this is a transfer between groups in that value is neither created nor consumed, merely redistributed. Airlines do benefit from serving new incremental demand. (This benefit is over and above the value provided to consumers by this new service.) Airlines also experience the costs associated with increased delays. In sum, airlines are net losers.

Finally, the airport provides increased services to support the additional demand incident to removal of the HDR. The revenue earned by the airport over and above the costs of providing these increased services accrues to the airport.

Consumers and airports are net gainers from elimination of the HDR. However, these gains are more than offset by transfers from airlines to passengers and increased delay cost incurred by airlines. Even if the increased airline cost were ultimately passed on to consumers, as might be expected where airlines are subject to competition, airlines would still be net losers. This is because the transfer to existing consumers from airlines stemming from fare declines is greater than the gains earned from serving incremental demand increases.

[3] "A Study of the High Density Rule," Report to the Congress, Department of Transportation, May 1995.

TABLE 8-1

SELECTED BENEFIT-COST RESULTS for IMMEDIATE ELIMINATION of HDR at LAGUARDIA AIRPORT

Benefits and Costs by User Group	**1995**	**2000**
Dollar Benefits and Costs ($ Mil. per Year):		
Consumers:		
Fare Reductions	$160	$167
New Service	$78	$101
Increased Delay Cost	($149)	($226)
NET BENEFIT to CONSUMERS	$89	$42
Airlines:		
Loss of Fare Premium	($160)	($167)
Incremental Demand Impact	$104	$111
Increased Airline Delay Costs	($64)	($97)
NET BENEFIT (LOSS) to AIRLINES	($120)	($153)
Net Revenue to Airports:	$14	$24
TOTAL BENEFITS	$193	$236
TOTAL COSTS	($213)	($323)
NET DOLLAR BENEFIT OF ELIMINATING HDR	($17)	($87)

Source: "Report to Congress: A Study of the High Density Rule Study," May 1995, pp. 90-94.